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*Scientific
Intelligence
Report*

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**EXCEPTIONALLY LARGE
SOVIET SPACE BOOSTER
PROGRAMMED FOR 1967**

OSI-SR/ []
15 March 1965

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NGA Review Complete



Office of Scientific Intelligence

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[Redacted]

Scientific Intelligence Report

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**CENTRAL INTELLIGENCE AGENCY
Office of Scientific Intelligence**

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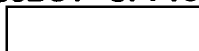
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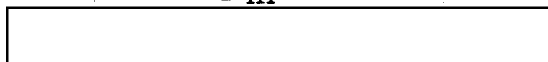
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Brief

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PREFACE

Overhead photography of the Tyuratam Missile Test Range (TTMTR) during the past two years has shown that boosters more powerful than the SS-6 are under development for the Soviet space program. This study was undertaken to determine the possible booster size and program timing of a vehicle which could be associated with Complex J of the TTMTR.

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EXCEPTIONALLY LARGE SOVIET SPACE BOOSTER
PROGRAMMED FOR 1967

CONCLUSIONS

The rate of construction at Complex J of the Tyuratam Missile Test Range indicates that the complex will become operational by late 1966. A Soviet flight test program involving new, very large boosters is therefore expected to begin in 1967. No apparent slowdown in construction was discernible after the 1964 change in Soviet leadership. The test programs scheduled for this complex apparently have retained their priority.

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Although no specific evidence of intended launch vehicle size is available, firing a booster producing as much as ten million pounds thrust from conventional propellants would not subject either Complex J or nearby Complex A to excessive hazards. Further, the probable launch pad also could function as a static test stand.

DISCUSSION

Rate of Construction

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Complex J, which was begun [redacted] was progressing beyond a mid-stage of construction [redacted] with over 2.3 million square feet of buildings completed or under construction. There are four main areas at this complex: a very large assembly/checkout building; a combination construction base and permanent military barracks area; a "high quality" housing area; and a recently begun launch area. (Figure 1) Each of these areas is considered unusual for Tyuratam, either because of its rate of construction, size, or ultimate function.

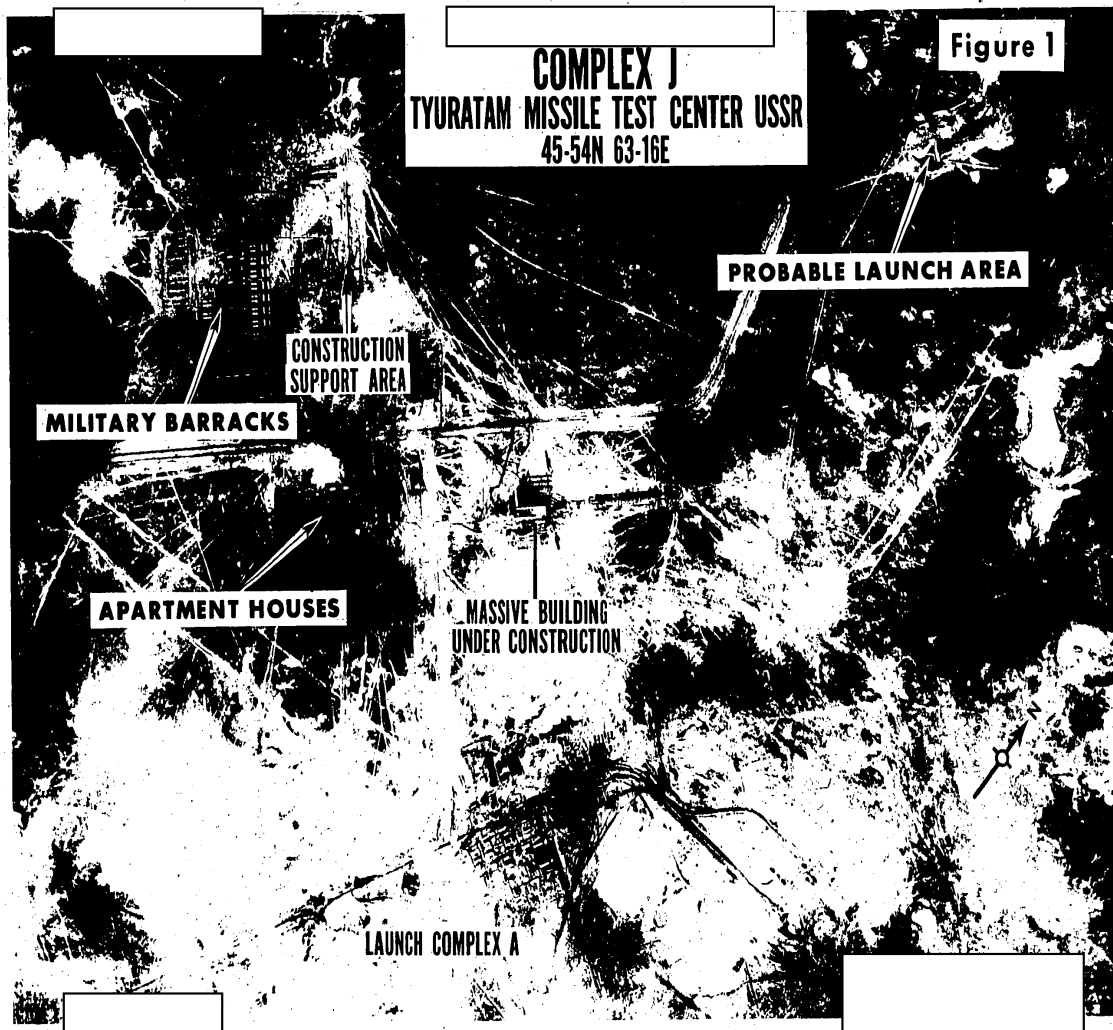
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[redacted] shows that Complex J has had a continuing high rate of construction since its inception. There has been no apparent slowdown after the change in Soviet leadership. The seeming let-up in mid-1964 was caused by the

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below-ground foundation work for the assembly building and the housing area. The use of three rail-served concrete mixing plants at the construction base is unique for a single complex at Tyuratam and indicates the priority of construction and the large future size of Complex J.

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indicates that Complex J could be completed by late 1966. A flight test program could then be expected to begin in 1967.

Assembly Building

The 460,000 square foot rail-served assembly/checkout building has bays with a maximum usable height of 150-175 feet. This height is adequate for the vertical assembly of large stages but not a complete launch vehicle. (Figures 3 and 4) It is, however, adequate for the horizontal assembly of a large vehicle.

Three rail spurs now entering alternate bays of the vehicle assembly/checkout building appear to be used for cranes which are erecting the building. Eventually each bay may be rail-served. Figure 4 shows the total number of vehicles which could be prepared at one time if a rail line to each bay were constructed. This particular arrangement does not depict the floor space required for the fabrication of major components from factory finished sections. Such fabrication will be necessitated by inadequate transportation facilities between the factories and the rangehead. The unusual size of the building is suggestive of such work. As a size comparison, the primary assembly/checkout buildings at Complex A (used for current Soviet space programs) and the new Complex G each enclose 40,000 square feet and have usable heights of about 70 feet.

The basic method of checkout and launch of spacecraft at Tyuratam apparently has been an integrated systems check in a horizontal position at an assembly building, coupled with a minimum time in an erected position on the launch pad. This has been the modus operandi for all SS-6 boosted vehicles. It would seem to be the method chosen for surface (as contrasted to silo) launchings from Complex G.

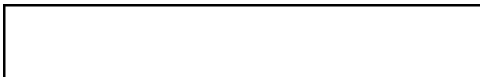
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"Civilian" Housing

The 750,000 square feet of apartment houses under construction or completed next to the large assembly building is unusual. This is in addition to the more than 500,000 square feet of typical, multistory military housing previously completed adjacent to the support base. Heretofore all "civilian" housing for the rangehead has been in the town of Tyuratam. It is believed that the spacecraft technicians who work on upper stages and payloads, and some of their families, live in the town. Further, busses and automobiles now are used to transport the

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Figure 3

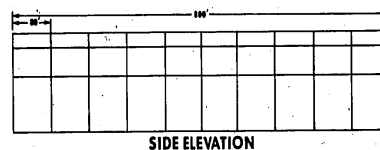
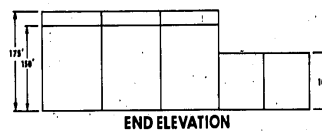
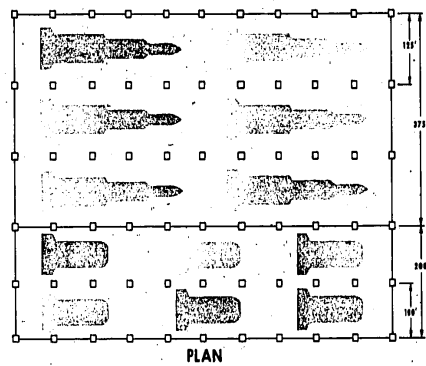
MASSIVE BUILDING UNDER CONSTRUCTION, COMPLEX J
TYURATAM MISSILE TEST CENTER, USSR
45-54N 63-16E



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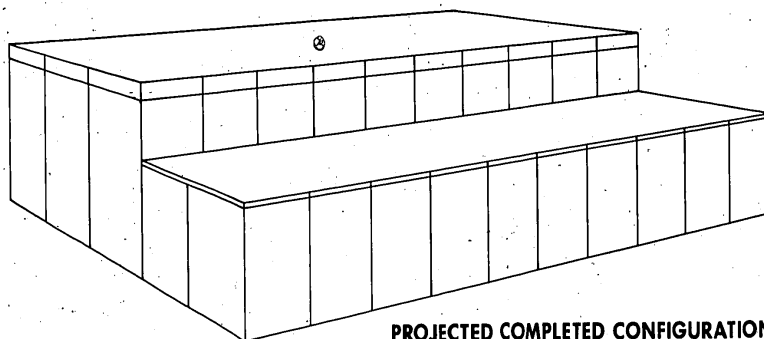
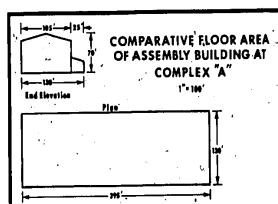
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FIGURE 4
ASSEMBLY BUILDING
COMPLEX J TYURATAM



1"=100'

ALL DIMENSIONS APPROX.



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technicians the dozen miles from the town to the vehicle assembly areas. Troops

apparently are housed in barracks at each of the launch complexes. This would explain the permanent military barracks area which was constructed at Complex J. The apartment houses at the new complex, therefore, are considered to be for additional spacecraft workers. The placement of the apartments at the complex itself is considered a strong indication that the complex is space oriented.

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a population of about 5000 troops in the barracks and 5000 civilians in the apartments. A portion of the latter group, however, might be non-technical workers. The large population at the complex also is indicative of an intent to perform large component fabrication in the assembly building. There is no direct evidence, however, of final vehicle size.

Probable Launch Pad

An approximately 120-foot deep terraced excavation northeast of the assembly building is probably the start of a launch pad. (Figure 5)

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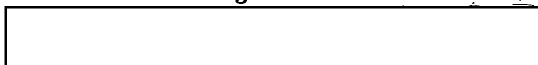
complexes. showed the rail line next to the major road being extended beyond the assembly building.

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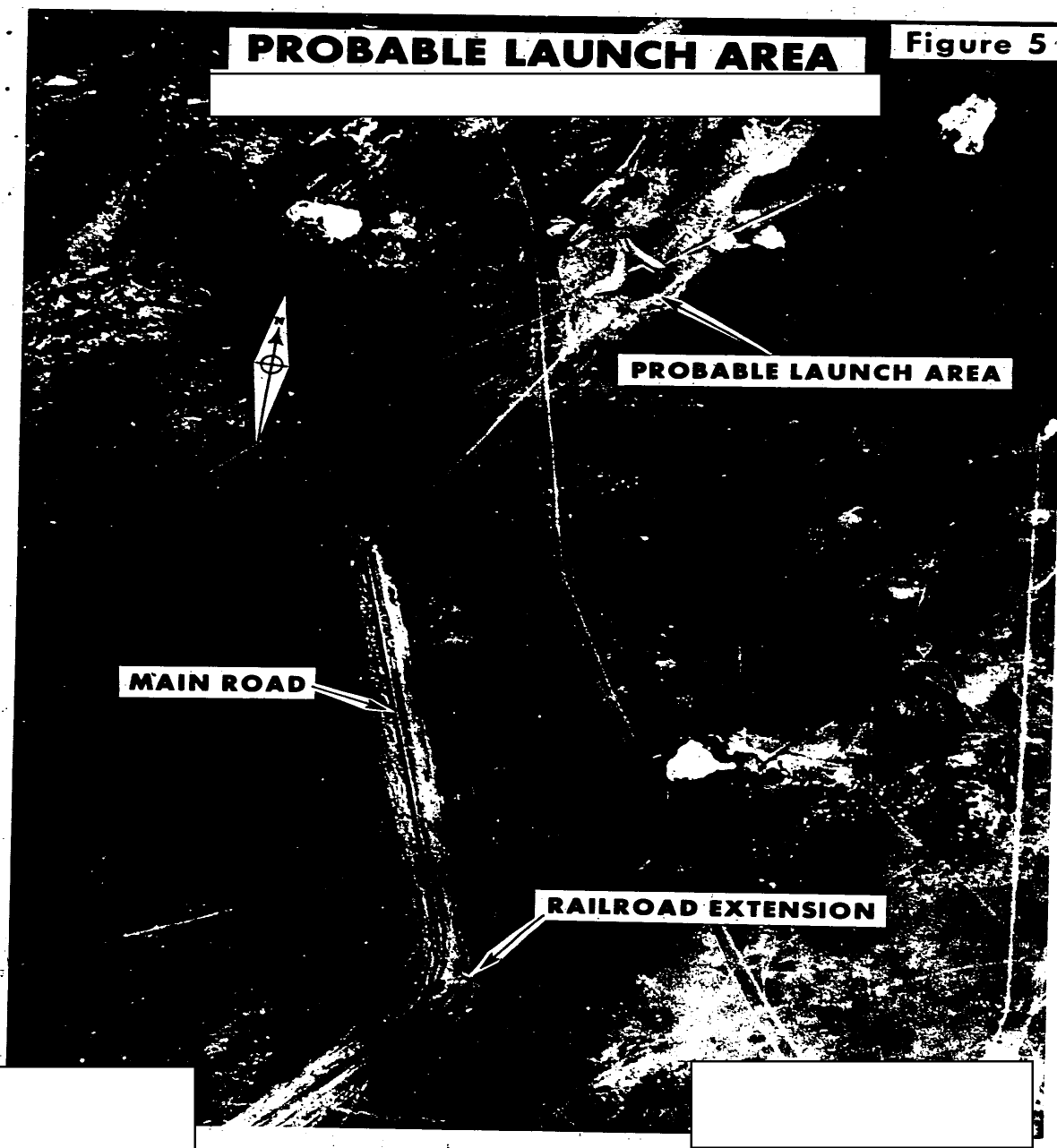
Analysis of the overpressures which would be caused by the maximum explosion of a hypothesized 3-stage, 8.7 million pound thrust spacecraft (akin to the Saturn V) shows that they would not be hazardous to surrounding facilities and housing. Only 0.25 psi would impinge on the new assembly building; similarly, only 0.16 psi would impinge on the Complex J apartment houses, launch pad A1, or on the Complex A assembly building. The noise level (approximately 125 decibels) which might be encountered at the apartment buildings from a successful launch is well below the threshold of pain and is acceptable in a controlled condition where people could be forewarned. The site, therefore, is considered to be sufficiently isolated for the launch of large vehicles which use conventional propellants (as opposed to those which generate toxic or radioactive combustion products).

The function of the excavation area, begun in the summer of 1964, is not yet clear but should become more apparent as construction progresses. The 700 foot long by 500 foot wide pit has six generally straight sides with two ramps leading into it. This hexagonal shape has a diameter of about 325 feet at its lowest level. In comparison, the pit at Complex A is 880 feet long by 550 feet wide by 140 feet deep. As judged by the current state of construction of the

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launch area and the construction of a new, large diameter, water line from the main pumping station supplying the rangehead towards the J. Complex, the Soviets apparently have reverted to the older design of water-cooled blast pits rather than the dry blast deflectors used at pads G3/G4. The latter are more appropriate to the Soviet state-of-the-art for launch pads, thus this reversion to a far more complex and costly design probably indicates that the installation will serve as both a static test stand and launch pad. This pad could be finished by mid to late 1966.